

18. Wheeled Soccer Robot	Contestants	Robot building
Level : Junior / Senior	2 persons / 2 robots	Fully assembled (Ready-built)

Competition Description

Robot Soccer (Wireless Remote-Controlled) is a competition in which participants demonstrate their skills in designing, building, and operating robots. Each team controls its robots via radio signals or wireless remote controllers to compete for possession of the ball and score goals against the opposing team, in accordance with the official competition rules.

Robot Specifications

1. Robot Requirements

- 1.1 Each team must have two robots. One robot may serve as the goalkeeper and the other as the field player, or both robots may serve as field players.
- 1.2 Each robot must not exceed 15 × 15 cm in size and 500 grams in weight (excluding the remote controller). The robot height is unrestricted.
- 1.3 Robots must be wirelessly controlled only and must be equipped with measures to prevent signal interference that may occur during the competition.
- 1.4 Only dry-cell batteries are permitted, with a maximum operating voltage of 7.4 V (2S battery).
- 1.5 Each robot may use no more than two motors.
- 1.6 Any ball-handling mechanism must have a maximum depth of 3.5 cm, or no more than half the diameter of the competition ball. Devices designed to hold or attach the ball, such as adhesive tape or hook-and-loop (Velcro) fasteners, are strictly prohibited.
- 1.7 Teams are responsible for ensuring that their robots comply with all regulations throughout the competition. If a robot is found to violate any rule during inspection, the team will be immediately disqualified.

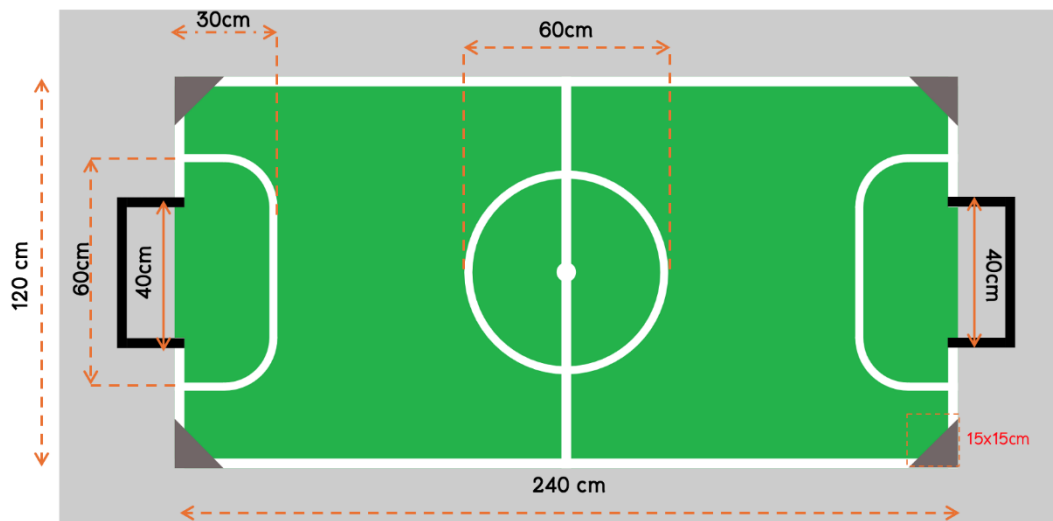
2. Robot Control

- 2.1. Robots must be controlled wirelessly and moves on wheels.
- 2.2. The robot's communication system must be capable of being disabled upon request by the referee for inspection.
- 2.3. Any type of wireless remote-control system is permitted, including 2.4 GHz, Zigbee, Bluetooth, Wi-Fi, or other wireless communication technologies.

Competition Field

1. Field Dimensions
 - 1.1 The playing field measures 120 × 240 cm (internal dimensions).
 - 1.2 The field surface may contain joints with a height difference of no more than 3 mm.
2. Field Walls
 - 2.1. Walls surround the entire playing field.
 - 2.2. The walls are 10 cm high.
 - 2.3. The walls are white and may display competition or sponsor stickers.
3. Goals
 - 3.1. A goal is located at the center of each shorter side of the field.
 - 3.2. Each goal measures 40 cm wide × 15 cm high × 10 cm deep.
 - 3.3. The goalposts are aligned flush with the inner edge of the field wall.
4. Playing Surface
 - 4.1. The playing surface consists of green carpet mounted on a wooden base.
 - 4.2. The field includes a center line, center circle, center mark, and penalty areas, all marked in white (as shown in the illustration below).
 - 4.3. All field markings are 3 cm wide to ensure clear visibility.

Example Robot Soccer



Ball

1. The competition ball will be provided by the organizer. A tennis ball will be used for the competition.
2. The ball must be symmetrical in both weight distribution and center of gravity, with a diameter ranging from 6.45 cm to 6.86 cm.



Tennis Ball Used in the Competition

Ball Possession

1. The ball possession area refers to any structure or component extending outward from the robot that is designed to interact with the ball.
2. The ball must not be enclosed within the robot. No part of the robot may extend over more than half of the ball's diameter or 3.5 cm, whichever is less. (The referee will inspect and measure this before every match.)
3. Robots are not permitted to hold or trap the ball ("Hold"). Holding the ball means restricting the ball's free movement. Examples include:
 - The ball stops rolling while the robot is moving with possession of the ball.
 - The ball does not rebound freely when it comes into contact with the robot.
 - Any other mechanism that prevents the ball from moving naturally.

Scoring

1. A goal is scored when the ball completely crosses the goal line and enters the area behind the goal.
2. The team that scores the most goals during a match is declared the winner.
3. A draw is recorded as a tied result during the group stage.
4. An own goal is awarded as a goal to the opposing team.

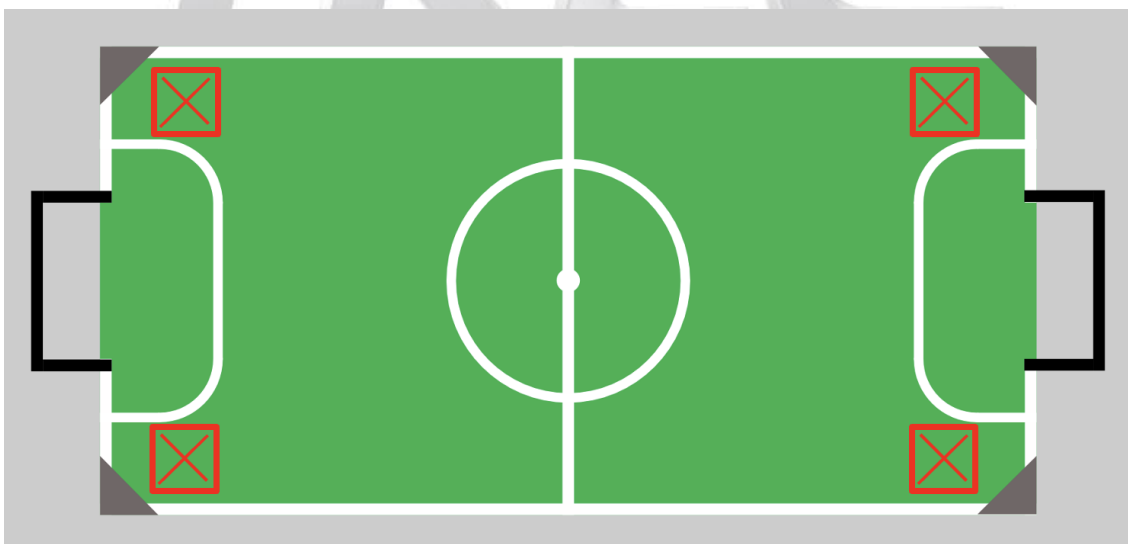
Match Duration

1. Each match consists of two halves, each lasting 3 minutes, with the clock running continuously (no stoppage time).
2. The halftime interval shall not exceed 2 minutes, during which teams may repair or adjust their robots.

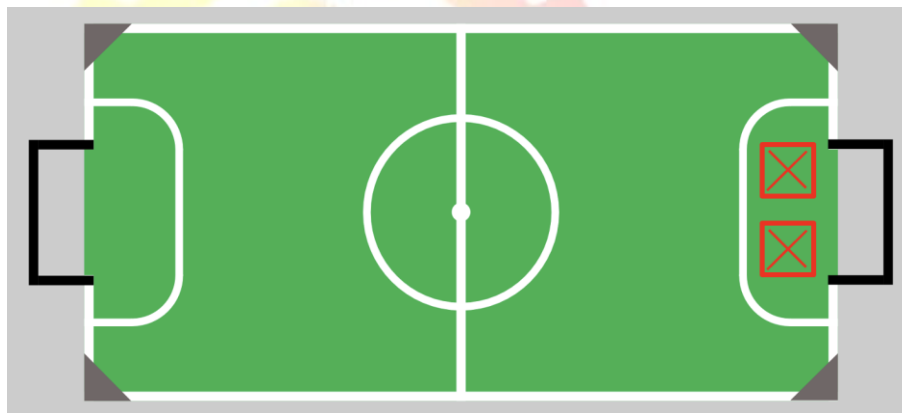
3. The referee may stop the clock to explain a decision or to remove damaged robot parts resulting from collisions.
4. Teams must report to the competition field before the scheduled match time.
5. If a team reports more than 1 minute late, the team will forfeit the match and receive a 2-goal penalty.

Match Procedures

1. Before the match begins, the referee will conduct a coin toss. The winning team may choose either which side of the field to defend or which team takes the kickoff.
2. The team taking the kickoff must place the ball at the center mark of the field.
3. At kickoff, all other robots on the field must remain within their own penalty area.
4. The match officially begins when the referee gives the starting signal. Only then may teams operate their robots.
5. After a goal is scored, the team that conceded the goal will always restart play with the kickoff.
6. If two or more robots become entangled and the ball remains motionless for more than 10 seconds, the referee will instruct the teams to separate the robots and perform a reset.
7. If any part of a robot becomes detached or a robot malfunctions during the match, the referee will remove the detached part from the field. The team may request to repair the robot while the match continues.
8. If a robot becomes immobile or cannot be controlled, the referee will instruct the team to remove the robot from the field. The team may repair the robot or reposition it at either side of its own penalty area, while play continues.
9. Once the robot has been repaired and match time remains, the team may return the robot to the field by placing it at either side of its own penalty area, as shown in the illustration.



10. After the match has started, if a team is unable to field both robots within 1 minute, the team will forfeit the match with a score of 2–0.
11. Teams are not permitted to touch or remove a robot from the playing field without the referee's permission. A team that violates this rule must remove one robot from the field for 1 minute as a penalty.
12. If both robots of the defending team are inside their own penalty area at the same time and this affects the opposing team's opportunity to score, the referee will call a foul and restart play by resetting the ball. If a team commits three such fouls during a match, the opposing team will be awarded one goal. The foul count will be reset to zero at the end of each match. (See the illustration below.)



During the Match

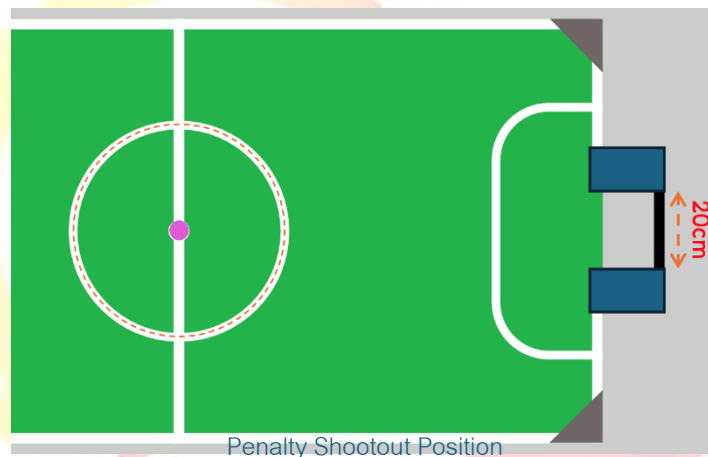
1. If a team has any questions regarding the referee's decision, the team must raise the concern immediately. If the referee permits, the match clock will be stopped, and the referee will explain the decision.
2. Photographs may not be used as evidence for the referees' decisions.
3. Any protest against a referee's decision after it has been explained will result in a yellow card. Continued protesting regarding the same decision will result in a red card.
4. A participant who receives a red card must leave the competition area for the remainder of that match.
5. A participant who refuses to accept a red card will be disqualified from the remainder of the tournament.
6. The Organizing Committee reserves the right to modify the competition rules or procedures whenever necessary to ensure fairness and suitability for all teams. Any such changes will be announced to all participating teams as soon as possible.

Reset

A Reset is the procedure in which the ball is placed at the center mark of the field while all robots must remain outside the center circle. The match clock will not be stopped during a reset.

Penalty Shootout

1. A penalty shootout will be used only when necessary to determine the winner of a match.
2. During a penalty kick, the robot may move toward the ball. However, it must not move beyond the arc of the center circle on the attacking side, as shown in the illustration.
3. During a penalty shootout, the goal width will be reduced to 20 cm.
4. There will be no opposing goalkeeper during the penalty shootout.



5. During a penalty kick, the robot must score by making physical contact with the ball.
 - 5.1. After the team has positioned the robot at the desired location, the team must notify the referee before the referee gives the signal to take the penalty kick.
 - 5.2. The robot taking the penalty kick must kick the ball forward.
 - 5.3. After taking the penalty kick, the robot must not touch the ball a second time. If the robot makes a second contact with the ball, it will be considered a foul. If the ball enters the goal after the second touch, the goal will be disallowed.

Group Stage Qualification

1. During the group stage, teams will be divided into groups. Each group will consist of no more than four teams, and there will be no more than eight groups.
2. The winning team receives 3 points. In the event of a draw, each team receives 1 point. The losing team receives 0 points.
3. Teams advancing to the knockout stage will be determined in the following order:



- Total points
- Goal difference
- Goals scored
- Number of wins
- Play-off match (if required)

Code of Conduct During the Competition

1. All participating teams and coaches must comply with the competition rules and regulations.
2. Unauthorized persons are not permitted to enter the competition area. Equipment unrelated to the competition is also prohibited within the playing field area.
3. Any action that interferes with the playing field, competition equipment, or another team's robot may result in immediate disqualification at the referee's discretion.
4. Teams must not use dangerous equipment or engage in any behavior that could interfere with the competition.
5. Unsportsmanlike conduct or failure to show respect toward referees or fellow competitors may result in a yellow card and may subsequently lead to a red card.
6. The field referee has the authority to disqualify any team if it is determined that the team has intentionally violated the competition rules.

Referees and Assistant Referees

1. The referee is responsible for enforcing these rules and making all decisions related to the match. The referee may be assisted by assistant referees.
2. During the match, the referee's decisions are final.
3. Any argument with the referee may result in a warning. Continued arguing or further misconduct may result in a yellow card, a red card, or immediate disqualification from the competition.
4. Shouting at the referee or demanding that a decision be changed may result in disciplinary action, including a warning, at the referee's discretion.
5. At the end of each match, the participating teams shall sign to acknowledge the result. The score recorded by the referee shall be considered final.

Rule Interpretation

If clarification of the competition rules is required during the tournament, only the Organizing Committee has the authority to provide official interpretations. All participants are responsible for reading and understanding the competition rules before the event.